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EDITORIAL

A Problem of Security

It has been said that the war situation must be improving for the allies since the calls for a national day of prayer have become less frequent. But if ever there was a need of invocations for wisdom and understanding, it will be April 25th when the delegates of 44 nations meet at the World-Security Conference in San Francisco. They will meet to formulate the plans for a world of peace—to give substance to those hopes for which so many have died and to the faith by which their fellows fight on. The task of the delegates will not be easy, and if we are to judge by past history, it will surpass the scope of human possibilities.

What makes this task so difficult and so impossible? There may be many answers to this question but basicly there are two requirements faced by the conference, the fulfilment of which work against each other. On the one hand, satisfaction must be given to the vengeance of those who have had to bear the ravages of war. Adequate punishment must be meted out to those nations responsible for the ruthless loss of life and reckless destruction of property. On the other hand, a system of international co-operation must be evolved that will insure equal justice to all nations.

Can this be accomplished if an innocent people are made to pay the price for crimes which they did not commit. Is it reasonable to expect the people of any nation to live their lives without any hope of achieving equality with their fellow man. There is no question but those who directly or indirectly were responsible for this ghastly war should pay the fullest price that it is possible to extract. But if a new generation is made to pay with their freedom for crimes in which they had no part, those people must inevitably arise to break their bonds whenever there is a leader to lead them.

It is to be hoped that the delegates of the United Nations meet in San Francisco, not only to lay plans to enforce peace but to create the desire for peace among the conquered peoples as well as the conquerors. Then will our men have accomplished their purpose on the battlefild and their sacrifice will not have been in vain. Truly, a world of peace is the only form of monument which can adequately do justice to their memory.

EXAMINATION DATES

There has been a slight change in the order in which examinations will be written. The revised order is as follows:

Fundamentals of Cost Accounting	April 30
Accounting I	May 1
Advanced Cost Accounting	May 2
Accounting II	May 3
Industrial Organization and Management	May 4

New Members

Bay of Quinte

Carmon C. Atton, Tweed Foundries Ltd., Tweed, Ont.

A. Lockley, Belleville-Sargent Co. Ltd., Belleville.

Fort William-Port Arthur

Murdo MacKay, The Great Lakes Paper Co. Ltd., Fort William.

Hamilton

James M. Lapp, International Harvester Co. Ltd.

Kitchener

D. C. Jamieson, Royal Canadian Air Force.

W. H. Hughes, Business Systems Ltd., Kitchener.

Montreal

R. W. F. Daman, Noorduyn Aviation Ltd., Montreal.

W. J. McDougall, Woods Mfg. Co. Ltd., Montreal.

D. C. McLuskie, Verdun Protestant Hospital ,Verdun.

Niagara

E. C. Johnston, Anthes Foundry Ltd. and Imperial Iron Corporation Ltd., St. Catharines.

James W. Shea, Imperial Iron Corporation Ltd., St. Catharines.

Toronto

John Hurst, Royal Canadian Air Force.

A. T. Wolfenden, 121 Springhurst Avenue.

Vancouver

Adrian S. Baillie, Granby Consolidated Mining Co., Vancouver.

Non-Resident

E. W. Lambert, Dome Mines, Ltd., South Porcupine, Ontario.

Howard C. Poole, C.G.A., Lakeshore Mines Ltd., Kirkland Lake, Ontario.

Personal

Congratulations are extended to Mr. Paul Duchaine, C.G.A., L.C.M.I. in his re-election as Vice-President of the Shoe Manufacturers Association of Canada. Mr. Duchaine is a Director of the Quebec Chapter of the Cost & Management Institute and is one of the reasons why the Quebec Chapter expects a great future.

Mr. W. H. Furneaux, R.I.A., Vice-President of the Canadian Society of Cost Accountants & Industrial Engineers, has recently been elected Vice-President and Secretary-Treasurer of Aerovox Canada, Ltd. Mr. Furneau has been with the Company since 1932 and was appointed General Manager in 1936.

Mr. Hugh M. McDiarmid, a Director of the Toronto Chapter, has been appointed Manager of the Toronto Branch of the Canadian Exporters Association. Hugh was formerly Cost Accountant of Hinde & Dauch Paper Co. Ltd.

Mr. W. J. McCreight, A.C.A. (Ire.), R.I.A., formerly of the Treasury Cost Section, Ottawa, has been appointed Treasurer of W. Robinson & Son Converters Ltd., Toronto. Mr. McCreight has transferred from the Ottawa Chapter to the Toronto Chapter.

Chapter Notes

Bay of Quinte

The Chapter had a very unusual meeting on February 7th when it met with the Superintendent's Association. To this meeting were invited foremen and key men of the local firms for the purpose of promoting a closer relationship between the Accountants and Cost Accountants and Foremen and Plant Managers. There were 80 men in attendance to hear Mr. J. A. Lizotte, General Manager, Reliance Industries Ltd., give a very forceful talk on the relationship between the Cost Accountants, Foremen and Management.

The regular meeting was held on February 27th in the Y.M.C.A. The speaker of the evening was Mr. H. E. Yardley, C.P.A. Systems Manager, Ernst & Ernst, Toronto. The speaker's subject was "Planning for Post-War Standard Costs & Expense Control". When the meeting was thrown open to discussion, some lively debates ensued.

The next meeting will be held March 20th when three of the members will give 15-minute talks on various subjects which will be discussed in turn by the meeting.

Calgary

The Chapter held two well attended meetings on the 14th and 28th of February, both of which were addressed by local members. On the 14th, Mr. H. H. Hutton, R.I.A., of Burns & Co. Ltd., spoke on the subject "Flexible Budgets", particularly as it applied to the packing business. On the 28th, Mr. W. Lloyd McPhee, R.I.A., Canadian Western Natural Gas Company, addressed the meeting on the subject "Rate Base" as it applies to Utility Companies.

Edmonton

On February 23rd, the Chapter held a dinner meeting in the Corona Hotel. Following the dinner, Mr. A. J. Hamilton, C.A., B.Com., gave the ninth lecture in a series entitled "Application of Funds". For the benefit of student members, a discussion period of student problems was held after the close of the lecture.

Fort William-Port Arthur

At its regular meeting on February 20th in the Royal Edward Hotel, the Chapter was privileged to hear Mr. W. C. Lillie speak on the subject "Fire Insurance". Mr. Lillie spoke on the background of fire insurance, how they base their rates, and discussed the board insurance company versus the mutual company. A lively discussion period followed, and those present went home with a better grasp of fire insurance than when they came.

Hamilton

A former member of the Hamilton Chapter, Mr. G. "Mel" Walker, R.I.A., was the guest speaker at the regular monthly meeting on February 15th. Mr. Walker spoke on the subject "Job Evaluation", which he illustrated by means of charts projected on a screen.

The Student Section held a dinner meeting on February 28th in the Y.M.C.A. This was the first meeting of the students, and was called primarily for the purpose of organization. Approximately 50 persons were in

attendance, and the meeting was under the chairmanship of Mr. Allan Wright, R.I.A. It was unanimously decided that meetings of the students would be held on the third Tuesday of each month. The following officers were elected for the remainder of the year:

Chairman—Mr. W. J. Jones. Directors—Mr. Ken Rusk.
Secretary—Mr. S. H. Wilkins. Mr. H. Llewellin.

At the conclusion of the business two films were shown entitled "Principles of Time and Motion Study". The films were most instructive and conveyed to those present the tremendous possibilities in Time and Motion Study.

Kitchener

The Chapter held its regular monthly meeting on February 21st at the Walper House, Kitchener. The guest speaker was Mr. M. C. Coutts, R.I.A., of the Sanghmo Co. Ltd., Leaside, Ont. The subject for discussion was "Production Control." Despite the inclement weather, there were 50 present, including members from Elmira, Preston, Galt, Stratford, Waterloo and Kitchener. The Clare Musicians of Preston entertained the group during dinner. Mr. Reg. Kidner, C.A., R.I.A., was welcomed back after his illness.

The next meeting will be held March 20th at the Granite Club, when a quiz program will be conducted. Members are requested to send in questions on General Accounting, Cost Accounting, and Income & Excess Profits Tax. Mr. J. G. Brown, C.A. Mr. L. B. Hope, R.I.A., and Mr. Reg Kidner, CA., R.I.A., will reply to the questions.

London

Mr. H. Bricker, C.G.A., R.I.A., lecturer at McMaster University in Advanced Cost Accounting, addressed the Chapter at its regular meeting on February 22nd. The subject for discussion was "Business Management Through Accounting". Mr. Bricker displayed some very interesting and instructive graphs on the world business cycles and his talk generated a most interesting discussion.

The membership drive under the chairmanship of Mr. C. J. England, R.I.A., is already bearing fruit and before long it is expected there will be a fair increase in membership. Mr. L. W. Bennett, R.I.A., was welcomed back after a long absence. The next meeting will be March 22nd, when the speaker will be Mr. F. Ross McLean, Head Office staff of the Dominion Bank and the subject will be "Aspects of Foreign Exchange Control".

Montreal

On February 9th, Mr. R. E. Lloyd, B.Sc., Chief Cost Accountant of Canadian Vickers Limited, Aircraft Division, addressed the Chapter on the subject "Costs in the Aircraft Industry". On February 23rd, the Chapter was addressed by Mr. G. M. Walker, R.I.A., of Sheldon's Ltd., on the subject "Job Evaluation". Mr. Walker explained the point system of Job Evaluation, and illustrated his talk by means of slides. The great interest taken in this topic was evidenced by the lively discussion which followed.

An interesting evening is planned for March 23rd when the students of the Society will conduct a mock session of Parliament, in collaboration with the students of the Institute of Chartered Accountants. The dinner

will be held at the Mount Stephen Club, but the program will be carried out in the Windsor Hotel immediately after the dinner.

Niagara

One of the most successful meetings of the year was held February 21st at the Foxhead Inn, Niagara Falls. This was a joint meeting with the Buffalo Chapter of the N.A.C.A. and 68 members of the two Chapters were in attendance. The speaker of the evening was Mr. A. E. Grover, Senior Cost Systematizer of Thompson Aircraft Products Company, Cleveland, Ohio. Mr. Grover spoke on the subject "Cost Control Under Price Ceiling Regulations."

Ottawa

The Chapter had a most interesting meeting on February 21st with approximately 32 members and guests present at the Chateau Laurier. The speaker of the evening was Mr. H. M. Hetherington, R.I.A., President of the Society of Industrial & Cost Accountants of Ontario. Mr. Hetherington spoke briefly on matters of interest to the Society, and then gave an address on the subject "Some Vital Problems on Post-War Planning and Finance". Mr. R. A. Burdett, R.I.A., the new Chairman, conducted the meeting, and announced that plans were being made for some very interesting meetings for the balance of the season.

Quebec

The Chapter held a special meeting at noon on Saturday, February 24th, to meet Mr. J. Nelson Allan, R.I.A., recently appointed Secretary-Manager of the Society. Mr. Allan outlined the growing importance of Industrial and Cost Accounting in Industry, and discussed with the members of the Chapter various plans for the future of the Society. Also present at the meeting was Mr. E. J. Loiselle, L.C.M.I., President of the Canadian Society.

At the suggestion of the Chairman, Mr. A. J. Dolbec, C.P.A., L.C.M.I., the members decided to hold meetings the first Wednesday of each month.

Toronto

The Student Section of the Chapter held a most successful meeting on January 31st under the chairmanship of Bill Earle, at the West End Y.M.C.A. The subject under discussion was "Standard Costs" and was led by Mr. R. J. H. Ryall, Management Engineer.

The monthly meeting of the Chapter was held on February 14th when the speaker was Mr. L. W. Downie, President and General Manager of Kelsey Wheel Co., Windsor, Ontario, who spoke on the subject "Normal Capacity and Its Uses". Mr. Downie gave a very complete outline of the basis for determining normal capacity, which is a requirement for arriving at normal costs. The subject provoked much discussion and proved to be most interesting.

Vancouver

The meeting on February 8th was addressed by a member of the Chapter, Mr. Norman C. Hartley. The subject of the address was "The Installation of a Standard Cost and Flexible Budget System." A welcome guest at the meeting was Professor E. H. Morrow, head of the Department of Commerce, University of British Columbia.

Windsor

The Chapter held its regular monthly dinner meeting on Thursday,

February 22nd at the Norton Palmer Hotel. Thirty-two members and guests were present to listen to Mr. Gordon Thompson speak on the subject "Law of Contracts". The address was in three parts, Kinds of Contracts, Who Can Make Contracts and The Form of Contracts. An interesting discussion period followed the speaker's address.

The next meeting will be held March 22nd when the speaker will be Mr. B. F. Jackson, Price Waterhouse & Co. Mr. Jackson's subject will be "Use of Cost Accounts to the Auditor".

Controlled Job Costs

An Address Before the Vancouver Chapter

By F. G. COBURN

District Supervisor—Treasury Cost Division, Dept. Munition and Supply .

There are many different types of controlled costs but I have chosen the most elemental or primary type and I trust that you will bear with me if some of the statements made by me are very elemental. I have done this purposely because I think that we could very well start on this low plane for a beginning and work through controlled costs, varying types until eventually we become so involved amongst ourselves that we will possibly be sent to that place in the Hereafter where all Engineers or Production men have, in the past, happily consigned us.

I have chosen this subject because I firmly believe that the term "Controlled Costs" is not thoroughly understood or its value appreciated by a great many of the Manufacturing and Business concerns in this area and it is possible that some of you do not understand exactly what I mean by the term "Controlled Costs".

The only control which acts as a proper control is, in the final analysis, the expenditure of cash and this is the controlling factor which should be the prime means of producing costs which can be proven. Therefore, it is necessary, in order to obtain controlled costs, that the cost records of the concern should form an integral part and be tied in with the general books of the company and every part of the cost elements should be traceable back to a legitimate expenditure made by the Company, whether this be in the nature of prime costs, such as labour and material, or the indirect costs of overhead, burden, or administration.

There are a number of different ways of producing costs which may be proven or controlled but I am selecting as my example the simplest and most commonly known method, namely "job costing", and for the distribution of the indirect costs I am also using direct or productive labour as the distributing factor.

As I have just mentioned, the prime costs are those relating to labour and material. Let me deal first with the production or originating department of the jobs or products to be completed or manufactured. In order to produce job costs a series of job numbers must be allotted by the Production Department which will follow the different phases of manufacture through the shops to indicate to the workmen concerned the type of work to be performed and the quantities required and to also indicate

to the Cost Department that such manufacture is in process. There are many other reasons for the issuance of an order such as the estimating, Purchasing Departments, etc., with which I am not going to deal. There should also be a series of work order numbers or job numbers to take care of the charges which build up the burden or overhead accounts.

I will now deal with the handling of direct and indirect labour. It is my opinion that the payroll should be broken down into three sections or three separate payrolls, one for hourly rate employees, one for salaried employees, and one for the Executive or Administrative salaries.

The hourly rate employees should complete each day, in one of the accepted forms, a statement of the hours worked by jobs. The total of these statements or tickets must agree with the gross total of the hourly rate payroll and provide a breakdown of the gross payroll by jobs.

The total of the payroll should be charged to a General Ledger Payroll Account, which will provide the necessary controlling account for labour charged to work in process.

The breakdown of the labour tickets provides the posting medium to accounts covering each productive order which should be opened in a Work in Process ledger. The breakdown of labour will also provide the totals of labour of a non-productive nature which should be journalized from the controlling account to the various expense accounts concerned.

We now have a "Work in Process" ledger opened for each job number, have a controlling account for the productive labour embodied in the work in process, have time tickets to break down the labour costs and have tied this expenditure, through the payroll, back to the payroll bank account.

The next prime cost is—Material. It is my opinion that it is next to impossible to handle material and obtain controlled costs without setting up stores warehousing and perpetual inventory records. Many firms agree with this principle in part and a few agree in full. The charging of materials direct to a job from invoices leads, with few exceptions, to surpluses in the inventory and over-charges in costs due to several factors. In the first place, no Estimator can, with any degree of accuracy, determine in advance the quantity of all materials required for a job; and second, the foreman or chargehand has not the direct responsibility of moving materials to the job and seeing that the surpluses are returned unless there is established standard store practice and clean-up of materials back to stores at completion of an operation and a consequent credit from the Storekeeper to the Cost Accountant for such surplus.

I feel quite strongly on this matter and consider that it is in the interests of the Contractor, his Auditors, and, if he is working on a war contract, definitely in the interests of the Government, that proper stores accounting and warehousing be established.

It should be standard practice to issue purchase orders for all materials purchased and cost of all materials should be charged to stores and actually taken to account physically and on the books by stores.

The local shipyards have adopted a uniform system of stores accounting and warehousing which has proven very satisfactory. For your benefit and to round out this address, I will quote it in full.

PERPETUAL INVENTORY OF STORES OPERATION

There are essentially two divisions in the operation of a perpetual stores inventory and the proper warehousing of stores, namely:

(a) Receiving and delivery of goods.
(b) Stores Accounting.

By this division it will be readily recognized that there is a dual responsibility and this division of responsibilty should be quite definite.

Division A—The receiving and delivery and warehousing should be in the hands of a man responsible to the purcahsing and production end of the operation.

Division B—Is purely a responsibility of the accounting and costing end, at the same time supplying the Purchasing Department with required data from time to time on stocks held or required. The Stores Accountant should be responsible to the Chief Accountant only and the Storekeeper should not be in authority in any way over the Stores Accountant.

The physical arrangement of stores should be such that deliveries are speeded as much as possible and fast moving stock should be more readily available for delivery than the slower moving articles.

The physical arrangement should be, as far as possible, on a type basis. Articles should be binned or laid out on the floor or in racks in an orderly manner, with all such bins, racks, or places numbered, and each section, in addition, lettered,—for example, in a General Store, Section and numbers, might be as follows:

Section A—Bins 1 to 500—Pipe Fittings.
Section B—Bins 1 to 390—Shelf Hardware, etc., etc.

The locations and types of stores should govern the number of General Ledger Stock Control Accounts and the sections included in each store should govern the number of Sub-controlling Stock Accounts. For example, in a Shipyard the following stores division seem appropriate:

1. General Stores,
2. Electrical Stores,
3. Pipe Stores,
4. Paint Stores,
5. Steel Stocks,
6. Finished Parts.

Each of the above, or as many more as are considered necessary, should be controlled by an account in the General Ledger in order to provide a very necessary breakdown for speedy location of errors. Sub-controls should be operated. Sectionalizing also provides a means of allocating responsibility to individuals for the proper operation of the perpetual inventory and the balancing of it at the end of each month.

One man on a perpetual inventory should not be given more accounts than he can properly handle and the Stores Accountant, in a big operation, should be entirely free of other duties to permit of his constant supervision of the accounting records.

RECEIVING OF GOODS

Goods received for Stores Account should be accompanied by a delivery slip. If no delivery slip is received, a receiving report should be prepared. The storekeeper must check the delivery goods with the receiv-

ing slip and, as he bins the goods, should mark on the slip the store number and, against each type of goods, show the section and bin number. The slip should then be passed to the Stores Accountant. The Stores Accountant will have on file a copy of the purchasing order to which the delivery slip should be attached after the goods are recorded as received. These should then be held on file awaiting the arrival of invoice and freight bills (if any).

Invoices

As soon as an invoice, with the freight bill, is received the Stores Accountant's designated Assistant checks the documents, namely—Purchasing Order, Invoice, to the Delivery slip and marks against each type of goods the section and bin number.

Posting

The invoice and delivery slip are then passed to the Ledgerkeeper concerned who posts the date of invoice, origin of goods, invoice number, quantity and amount to the inventory card, extends the balance and total quantity on hand and works out the unit price. The unit price is arrived at by dividing the total quantity on hand into the total value, thus arriving at an average price of goods on hand.

Proving Balances

Combined with the posting in a large operation it is highly necessary to eliminate, as far as possible, errors in extension and posting and to make month end balancing as simple as possible. To achieve this, proof of correctness of posting is needed and for this purpose the Ledgerkeeper must use the attached form, marked "A" on which, it will be noted, are provided columns for previous balance, amount of entry and new balance. By adding all three columns it can be proved that the posting has been correctly performed, providing the entries on the invoice are counted and total number of entries on the invoice agrees with the total number of entries on the sheet. When this has been done, the invoices which have been completely posted should be passed to the Accountant for summarizing and, those on which another Ledgerkeeper should work, should be passed to the Ledgerkeeper concerned.

Summarizing and Logging

At the end of the day the Accountant should run off an adding machine tape of all invoices posted before he passes them to the paying department. Each Ledgerkeeper passes to him a summary of the total posted to his section from the proof sheets. These two totals should agree. The totals for each section should then be posted to a columnar sheet on which is provided debit and credit columns, with the balance from the month previous brought forward and should, at the month end, provide (with the inclusion of credits dealt with later in this memorandum) an immediate means of proving the month's work.

In this section I have dealt purely with the physical receipt of goods and the operation of the perpetual inventory and have purposely failed to touch upon the records required by the Purchasing Agent as I feel that this is already provided for by each yard.

DELIVERY OF GOODS FROM STORES

NO ONE SHOULD RECEIVE GOODS FROM STORES WITHOUT A PROPERLY SIGNED REQUISITION

NO ONE SHOULD BE ALLOWED IN THE STORE UNLESS HE WORKS THERE OR IS RESPONSIBLE FOR ITS OPERATION

A stores cannot be properly operated unless these two fundamental rules are, without exception, strictly observed.

Requisitions and Delivery

When the requisition is received, and as the goods are being delivered, the section and bin number is marked on the requisition and periodically, or once each day, as arranged, the requisitions are passed to the Stores Accountant.

Sorting

The Accountant's designated clerk sorts the requisitions by stores and sections and, after this has been completed, numbers the forms with a Bates Numbering Machine. They are then passed to the Ledgerkeeper for pricing and posting.

Pricing and Posting

The Ledgerkeeper should then sort the requisitions to bin numbers, or as closely thereto as possible. He should then price and extend as he posts, watching at the same time that the description of goods is that shown on the card to prove the correctness of the bin number; and post to the credit proof sheet as detailed later. If the card shows insufficient stock to fill the requisiton, yet goods have been received, the posting should be completed and the last unit price should be used and the balance on the card should be shown in red ink.

Proof of Posting

A sheet for proving his work should be used and entered as the posting proceeds. When the sheet is full it should be added and proved as previously outlined and also the entries made, as shown by the requisitions, should be counted and proved with the number of entries on the proof balance sheet. When this has been done, any requisitions referring to another section of the store should be passed to the Ledgerkeeper concerned. The ones which have been fully posted should be passed to the Accountant. A Summary should be prepared by each Ledgerkeeper of the total posted during the day, which is the total of his proof sheets.

Sorting to Jobs and Expense

As the requisitions are received by the Accountant from the Ledgerkeeper, his appointed assistant should sort them to jobs and expense and at the close of the day they should be added and bound, with their adding machine tapes attached, and summarized by jobs and expense.

Logging and Summarizing

The totals from the summaries made by the Ledgerkeepers should be run up on the adding machine and if the total agrees with the total of the summary by jobs the ledgerkeepers' totals should be posted to the control summary log record.

Cost Records

The summary, by jobs, together with the requisitions if necessary will then be passed to the Cost Accountant for entry to the cost summary.

General Ledger Controls

The General Ledger Control Credits will be posted by journal entry supplied by the Stores Accountant from his log record. The General

Ledger Control Debits will be posted from the voucher record distribution.

Sub-Controls

As the balancing of stores records is made at the month end from records maintained by the Stores Accountant it is necessary that as soon as possible after the month end the sub-controls be proved with the controlling account in the General Ledger. There will be occasions when the invoices entered by the Stores Accountant have not been put through the voucher register by the General Accountant and an allowance will have to be made for this. By proper liaison this can be kept to a minimum.

General Observations

This memorandum is based entirely on a manually operated complete inventory record with which is combined certain functions now performed by the Cost Accountant. Should certain of the yards be using machines of the punch card type, for distribution of stores, parts of this memorandum will need amending.

Checking of Stores

It is fundamentally necessary that a sufficient number of men be used to constantly check the number, quantity of physical stores in the bin. They should not be aware of the amount carried on the books but should independently check and report to the Stores Accountant who will then check the quantities shown with the amounts shown in the inventory and prepare journal entries for correction of stores quantities and values. Such journal entries must therefore pass through the hands of the General Accountant who can advise the Management of any unusual discrepancy. The compensating entry from stores will be to stock variation account.

This now provides us with the necessary medium to post to the Work in Process ledger the cost of materials used on each job during any given period, based upon the average purchase price or average landed cost. These costs, insofar as materials are concerned, can now be traced directly back from the cost ledger, through the stores records, through Accounts Payable to a cash expenditure, again tying the prime factor back to cash control.

The Summary, by jobs, now provides the necessary total to establish a material controlling account and the necessary credit to the stores controlling account. The material controlling account should be carried in the General Ledger and posted from this medium. It will be necessary to credit this controlling account and debit the proper expense accounts with the cost of materials used during the period on maintenance and other items of expense. The amount chargeable to each job number can be posted, thus bringing the Work in Process ledger into control with the General Ledger Controlling Account.

We have now brought our two prime costs, namely labour and material, into control with the General Books of account of the Contractor and we can trace every item of cost back to a cash expenditure.

This leaves the last remaining element of cost, namely, overhead or burden, which can best be generally described as follows:

(a) Labour, Supervision and Inspection, Clerical, Timekeeping, stores tool crib, cleaners, watchmen, etc.

(b) Materials and Supplies—Shop fuel, lubricants, waste, non-durable tools and gauges, etc.

(c) Service Expenses—Expenses of a general nature such as power, light, heat, operation and maintenance of plant assets and facilities.
(d) Fixed charges—Recurring charges such as property taxes, rentals and provision for depreciation.
(e) Miscellaneous—such as purchasing expense, employee welfare, holiday bonus, etc.
(f) Administration expenses, including salaries of corporate and executive officers, office salaries, janitors, cleaners, miscellaneous office and administrative expenses, such as stationery and office supplies, postage and normal contributions to local charities and other necessary office expenses.

Charges to overhead accounts will be obtained from several sources:
(a) Salary Payrolls,
(b) Distribution of hourly payrolls,
(c) Distribution of Stores Requisitions,
(d) Charges to expense, such as telephones, telegrams, postage, etc., taken through the appropriate book of original entry direct to expense,
(e) Journal Entries—Depreciation, Insurance, etc.

May I interpose here that it is, in my opinion, bad practice to charge to expense tool purchases as made; consumable tools should be taken to account in stores as purchased and charged to expense by stores requisition as required.

At the beginning of this address I stated that I was going to deal with the simplest form of controlled costs with the distribution of overhead on the basis of direct or productive labour. In order to obtain a uniform distribution of overhead by monthly periods it is highly necessary that the usual year-end entries or periodic entries, such as depreciation, insurance, taxes, holiday bonus, etc., be properly set up so that they can be taken into account in the monthly distribution as otherwise periodic fluctuations will take place and fair and reasonable or proper costs cannot be arrived at. The total of the overhead for the month should be determined in its relationship to the total of the direct labour and the proper percentage of overhead charged to each account in the Work in Process ledger that is called for by the quantity of direct labour charged. Two accounts should be established in the General Ledger, one to control Work in Process overhead, the other to take the contra credits to cover the distributed overhead. This has, in effect, provided, from the monthly journal entry of overhead distribution, the charges to each job order, and has wiped out, by the establishment of a contra credit account, the overhead carried in the expense accounts and established a controlling account for Work in Process overhead.

We now have established a control of overhead which can be traced back through labour tickets, through the payroll to cash, through stores requisitions, stores inventory, accounts payable to cash, covering the total overhead charged in the Work in Process column of each account in the Work in Process ledger.

The three accounts controlling the Work in Process are now established in the General Ledger and provide the complete control required in its three elements. I have purposely kept these accounts separate in the

General Ledger. Actually they should be one account with the elements separated for perfect control. As these jobs are brought to completion and accounts are rendered for them, the cost of each job should be transferred by journal entry from Work in Process to cost of sales and the sheets in the Work in Process ledger transferred, sales credited, and accounts receivable debited. At any period in the year, therefore, without physical inventory, the Management know that their inventory is represented by the total of the Work in Process ledger and their perpetual stores inventory. Definite routines can be laid down and followed monthly and all costs be in perfect control, or, in other words, be traceable back to a cash expenditure.

Work Simplification—Why?

An Address to the Cost & Management Institute, at Mount Stephen Club, Montreal, Jan. 26, 1945, by Alan Herrgen, R.C.A. Victor Co. Ltd.

Work simplification is not a highly technical process, nor does it necessarily use complicated tools and difficult approaches. It is primarily an attitude—a state of mind—which first asks why certain work has to be done, and then satisfied that such work is both useful and necessary, proceeds to reduce its cost in man-power and material expenditure through the application of simple and common sense work economy principles. This approach is obviously applicable in any line of business.

The need for simplification has arisen from our habit of performing a myriad of little actions we shouldn't have to. We waste several years of our lives going through useless antics—and miss doing a lot of more profitable things.

With your permission, I shall merely endeavour to outline the most effective of these fundamental approaches and principles and also try to suggest some organization for introducing and maintaining a cost reduction program in a typical plant or business organization.

You may be interested to hear briefly what has been accomplished by Mr. Alan Mogenson, the eminent originator of Work Simplification as such, who gave Montreal management perhaps its first formal introduction to the technique at the Engineering Institute in 1940. Since that evangelical meeting on behalf of efficiency—at which he shouted us to shame for our waste of industrial resources—he has passed his technique on to conference leaders, engineers and supervisors all over this continent. He has introduced effective cost reduction programs into hundreds of plants, businesses and services, and at present is in charge of Simplification in production of Lockheed P-38 Lightnings.

Not only has he been able to get high Army and Navy officials to hear his time and energy-saving proposals—at private meetings—he also obtained an appointment to the U.S. War Production Board and with a staff conducted simplification programs for the U.S. Department of Signals—an assignment which took him, a civilian, into the Western Pacific battle zones.

The reason I mention Mr. Mogenson here at all is to stress that Work

WORK SIMPLIFICATION — WHY?

Simplification is workable and working. I feel that we are not doing enough.

One of W.S.'s first approaches is to ask "WHY". To justify its own existence, perhaps we ought to ask WHY of itself. It would be an insult to your intelligence and the professions represented here to presume to tell you why we need economy—to-day or any time—in the utilization of material and manpower resources.

You are aware of the basic economic principle that as a nation or as individuals we can only have what we produce or save. Also the only way to increase national income and real wealth—the wealth going around to-day isn't real—is to increase productivity. However, for purposes of the present emergency and our postwar economy, I would like to rub in a few facts.

The first need for W.S. to-day is in Canadian and American war industries. I bring the U.S. into this discussion because there is no doubt in many minds that allied military victory would be impossible without U.S. production, and also because U.S. economic conditions are certainly reflected in this country and further.

Despite unlimited budgets, priorities, high wages, controls and functional assistance which have backed up our war industries, they are collectively and undisputably the least efficient. I say undisputable because anyone who examines individual man-hour productivity—apart from technological contribution—in the light of pre-war standards, can be converted. This productivity appears to be related to the stake of competitive enterprise, that is, related to the proportion of cost-plus and quoted contracts.

Gentlemen, we don't need 10,000 people to produce 15 aircraft a month, and it doesn't have to cost $15,000 for a 25-pounder. Nor do we need the 20 to 40% production scrap figure which W.P.B. states exists, and which is locally paralleled in Canada.

In 1944, our two countries are estimated to have produced about $90,000,000,000 worth of war manufacturing and construction according to orders for such placed internally. When we allow for wartime standards of management and supervision, for the power and attitude of labour, for strikes, absenteeism, and turnover (19,000 workers leave U.S. Steel industry monthly, while 17,000 enter), for costly design specifications beyond essentially, and for our limited regard for simplification principles, we can translate this output cost into something nearer $30,000,000,000 in value. This is borne out by the contention of many industrial engineers that the average job set-up allows from 25% - 75% of easily-attainable effectiveness.

Yet it is costing us the full $90,000,000,000 in manpower and materials for our destructible output. Ironically ⅔ of our waste is wasted.

Let us tie up another two facts. The Conference Board's Economic Almanac states that, entering 1943, the U.S. was short 5,000,000 workers for the war program on hand. At the same time, industrial psychologists announce that the average worker operates from 15% - 50% of his ability. Increasing the effectiveness of all workers only 10% would have provided the 5,000,000.

Again, stop some of the loss in waste labour and materials—bring out the will to work and to improve work, and we would undoubtedly be able to wipe out at least one retarding factor in our declined standard of

living—the housing crisis. Using the excuse of shortages, we're filling in areas of this city with jerry-houses that won't be standing in ten years' time.

It has become a widespread labour conviction that it has to limit productivity—to stretch out—in order to protect employment and fight the advances of contract termination on one hand and labour-saving technology on the other.

It has become a local labour—and management conviction that cost is no object—that nothing is too expensive for the government who pays all—therefore extra spare time, and extra men to spend it.

Certainly the government has taken steps to counteract inefficiency—and especially along the lines I am belatedly advocating. For one thing, W.P.T.B., to protect price ceilings, will give management advice. The War Labour Boards, through ably-conducted institutes, got the well-designed Job Methods Training over to 9,000 industrial Supervisors in Canada and 193,000 in the U.S. But what do they do with it?

Walk up to some of these supervisors and ask them! "Say, did you take JMT?" "Sure I took it—spent 10 hrs. at it!—Look I've got a card . . ." "Good stuff—and do you use it?" "Use it! Heck—we don't have time to use it—we HAD it!" They had it, I tell you—and they got over it—just like the measles!"

As long as economy principles are not taken seriously, management and government haven't done enough. We have not taken the simple common sense work laws which were expressed on this continent and put them to full use—everywhere. Instead, in many cases, we have protected labour's so-called right to work with one hand, or for a half day—at a full day's pay.

And the enemy! After we have bombed the daylights out of him for years and chased him back to his own borders, what happens? He sports new jet fighter planes, makes a U-boat come back, send over V-1-2-3, and rallies for an offensive. How does he do it—with vastly inferior resources?

Not by slave labour—let's not fool ourselves. The range of human capabilities is the same in any country. He has told his workers how they should work. He has taken the simple principles expressed by Taylor and Gilbreth and armed industry to the hilt with them. From the German National Institute for Work Studies, he is turning out his Refa-Manner or methods men by the hundreds monthly. There are now over 50,000 graduates. Their job is to apply timing throughout industry and to examine every detail in the process of manufacture to see if it cannot be simplified. The Refa-man will only be satisfied if nothing can be made easier, no new device added.

And so are the Japanese. U.S. Admiral Yarnell predicts four more years of Pacific War—with a probable 2,000,000 casualties. Isn't this thought worth a lot more W.S. than we've ever done in this country?

It's not a question of learning from the enemy. They learned that it was productivity—with a background of democratic free enterprise, if you like—but still productivity, that built up America. We are forgetting that. We haven't done enough.

The second immediate need for W.S. now and always is to counteract

the effect of labour's present attitude and action on postwar consumer good costs. If we don't we are going to lose our standard of living—just as we have been losing it since 1939.

A. The union in an American radiator company has succeeded in persuading a regional W.L.B. panel to forbid the company to install time clocks for job cost records on the grounds that, since the company had got along without clocks for years, it could continue to do so.

B. The Quebec Provincial Federation of Labour, on behalf of the Trades and Labour Congress has presented to the Quebec Cabinet a memorandum requesting the establishment of a 40-hour maximum week plus a 60-cent minimum hourly wage for all workers—without, I believe, any reference to productivity, that is, without acknowledging that the labour group affected must in some way contribute to the national pool proportionate to the proposed take-out.

C. Many labour management contracts now recognize seniority first for job priority—regardless of ability.

In protecting labour's rights, we have automatically prevented getting sufficient returns for those rights. We have guaranteed labour's earnings, but haven't gotten for the nation or its men in Europe the guarantee of a fair day's work.

The creation of value—providing more for the money available is the only permanent basis for sound economy under our free enterprise system. Only by increasing what wages will buy, can America provide 40% more jobs than it did in 1939. Labour must believe this and industry must give labour cause to believe it—by adopting new policies regarding technological displacement, rate-cutting, and so on. In any event, business and industiral management will be wise to provide better equipment and methods to offset the threatened decline in postwar productivity.

It must remove the cause of labour's convictions—and change labour's convictions. All this is part and parcel to a planned cost reduction program. It has and is being done in some organizations—but collectively, we aren't doing enough.

A third and very direct need for W.S. lies in the W.P.T.B. ruling that postwar consumer-good prices must be the same as at the basic period level of 1941 for similar products. And, Mr. Gordon says, this without a policy of lower wage rates. A spot-check indicates that certain lines estimated at to-day's costs would be priced about 25% higher with the same profit margin. Somebody's going to have to work for these profits!

Suppose we now examine some essential features of an organization-wide cost reduction program.

The first thing to remember about Work Simplification is that anyone can do it. The second thing to remember is that only certain people want to do it, while the third is that very few do anything with it. When you clearly recognize these three facts about people as a whole in your organization—and organize your approach and procedure in the light of them, then you are off to a good start to get results. And results in an

organized cost reduction program mean firstly, a substantial savings report to management (about 50 times the investment), and secondly, to the extent possible, an improvement in the working conditions and even earning opportunity of the working force. The toughest obstacle you'll be up against will be a tie between the inertia in people and the apathy of management.

W.S. is no longer the exclusive tool of specialists. By modern trend it is being taught to and used by management, supervision, and workers in progressive organizations all over the continent, though not yet on the all-out basis as in Nazi Germany.

It is true that a successful cost reduction program has to start with professional know-how and effective planning, but the engineer recognizes that there is too much waste and inefficiency evolving from our rising employment and technology for his kind to deal with completely. He knows that one of the best men to simplify a job is the man on the job who has lots of time to think about it—providing he can be persuades "why" and "how". For this reason many engineers are becoming teachers in realization that efficiency comes from propagation rather than experting.

Methods of instituting cost reduction programs have of course changed over the years. This is partly due to the changing relations of management and labour and partly for technical reasons as high job specialization by workers and the visible broader scope of results attainable.

In the light of the experience of Mr. Mogensen and his followers, the conference-and-practice technique, featuring compulsory total or representative participation by supervision and management is the modern approach conducive to best results. This type of program centers around periodic sessions or conferences—avoid calling them classes—conducted by a leader who is competent at dealing with the people he is guiding and using the simplification tools themselves.

The program also calls for a certain amount of field maintenance or follow-up by a company function which has direct dealings or contact with the entire work force. In manufacturing, the logical department is the Timestudy or Methods, for this is their normal line of business. In other businesses and services where no such function exists, a successful program can be conducted from such offices as personnel, general manager, or comptroller. Just what function conducts the program is not as important as the function or its representative being equal to the undertaking.

Motive and determination must be strong to follow projects through to end-results. There must be concern for detail and painstaking analysis of it. Patience and fairness must exist, for it credits for ideas and work on them is not accurately determined, grievances will arise.

The follow-up staff must be aware of the personal idiosyncrasies as resistant to change, resentment of criticism, inertia and plain laziness they will encounter, and be able to draw results past it all. This, experience has shown, they will probably not be able to do without full backing of the management. Because, believe it, if management doesn't want efficiency, the worker doesn't.

This management backing is best expressed in insistence upon conference attendance and work assignment completion, and even in actual participation itself. A sincere management will make it possible for con-

ference attendance. It will get answers from people too busy to attend or to remember and won't permit tossing out the future's investment to serve a momentary emergency.

Suitable recognition for individual or departmental results should also be a feature of the program. This has been done through cash awards, wage increases and promotions—according to the circumstances.

Regarding the propaganda and material to be disseminated at the conferences. It appears that collective bargaining—you know, those meetings at which management bargains and the union collects . . . Civil war—James F. Lincoln calls it—will some day effect most of us, including white-collar workers.

The work force will want to know WHY it should become more efficient and what it will collect out of it. What you tell the workers during the first sessions regarding the "Why" of your cost reduction program will determine what you get out of it.

You can't divorce economics from W.S. You'll have to prove—by use of elementary statistics, charts and films, that the American standard of living is the highest in the world—that it was brought about by productivity and that productivity is the only way to keep it, advance it, and spread it.

There is lots of material about for this and being a subject in itself, time doesn't permit dwelling on it to-night, but here is the idea. You must show the worker how efficiency and productivity, through simplification and effort, can and will benefit him.

To support this theory in the worker's eyes I suggest you be armed with a management policy for relocating or otherwise assisting a worker who is no longer needed because of simplification, and also for refraining from reducing earnings on that account. The worker doesn't give a darn that technological advancement has increased the overall ratio of employment to population. He is concerned about what it does to his job.

Mind you, I don't propose this as a general solution to the problem of technological unemployment. Government and industry haven't found one yet. I propose it merely as a policy regarding minor and local displacements—particularly where the worker has had a hand at suggesting improvements.

Nor can you divorce relations from W.S. An atmosphere that is taut with suspicion, fear, distrust, whether in factory or office, is not conducive to co-operation and effort in a cost reduction endeavour. In our language the "will to work" is absent. Employee relations is another subject in itself. For our purpose it is suffice to say that the Golden Rule can be applied in business profitably. The Hawthorne Experiments of Western Electric showed that.

And now we come to the simple little work principles whose absence is dragging out this war. The principles that cause people to say "It can't be done! Our work is different—we tried that a year ago—it won't work—besides what about our rights—our jobs?"

These work tools fall into three broad classifications:

1. Breakdown or graphical picture of work to facilitate analysis for improvement. Charts, etc.
   Flow Charts—Man and Machine Charts—Operator Charts.

2. Analysis—Questioning Attitude—Open Mind: Contacts with other functions.
   Four questions—Can operation or part be eliminated?
   Can operation or part be combined?
   Can sequence of operations be changed to advantage?
   Can operation be simplified?
3. Common-sense work economy principles.
   The Laws of Motion Economy.

The use of all these tools is simple. But remember that an idea is worth nothing on paper. It must be put into effect. Too few are—which is the failure charged to J.M.T.

Cost Accounting in the Canning Industry With Special Reference to Tomato Products

By OMAR W. COX, A.C.I.S.

Part III

THE COST OF PRODUCTION

Statement of Manufacturing Costs by Products—This statement covers both direct and indirect factory costs in total and by product, all sizes within a product combined. Subtotals are shown for the direct and indirect costs separately, and reflect the figures shown in the general ledger controlling accounts for these two groups of cost. The total direct costs under each product agree with the corresponding accounts in the subsidiary

Standard Cost of Indirect Manufacturing Expense Per Reduced Case

Department	Tomatoes	Tomato Juice	Tomato Soup	Tomato Puree
Receiving	.01229	.01229	.01229	.01229
Peeling	.03491	.....	.....	.....
Inspection	.00113	.00113	.00113	.00113
Chopper	.....	.00246	.00246	.00246
Juice Extractor	.....	.00307	.....	.....
Pulp	.....	.....	.00994	00994
Soup	.....	.....	.....	.12132
Can Handle	.00160	.00160	.00160	.00160
Hand Pack	.00343	.....	.....	.....
Fill and Close	.01382	.01382	.01382	.01382
Retort	.01023	.01023	.01023	.....
Case	.00448	.00448	.00448	.00448
Stack	.01021	.01021	.01021	.01021
Total Standard Cost per case of Indirect Manufacfacturing expense	.09210	.05929	.06616	.17725

Exhibit 14

Statement of Manufacturing Costs by Products

Element	Total	Tomatoes	Tomato Juice	Tomato Soup	Tomato Puree
Direct Costs	X	X	X	X	X
Labour	X	X	X	X	X
Raw Produce	X	X	X	X	X
Cans	X	X	X	X	X
Cartons	X	X	X	X	X
Condiments	X	X	X	X	X
Crop Expense	X	X	X	X	X
Loss on Seed or Plants	X	X	X	X	X
Trucking Raw Produce	X	X	X	X	X
Power Plant Expense	X	X	X	X	X
Indirect Product Labour	X	X	X	X	X
Direct Expense	X	X	X	X	X
Total Direct Costs	X	X	X	X	X

Indirect Costs

Receiving	X	Engineering and Maint.	X
Peeling	X	Auto Truck	X
Inspection	X	Building Service	X
Chopper	X	Crop	X
Juice Extractor	X	Other Fixed Charges	X
Pulp	X	Other Indirect Costs	X
Soup	X		
Can Handle	X	Total Indirect Costs	X
Hand Pack	X	Total Actual Cost of	
Fill and Close	X		
Retort	X	Production	X
Case	X		
Stack	X		
Factory Superintendent	X	Over or Under Absorbed	
Factory Office	X	Overhead	X
Laboratory and Exptl.	X		
Power Plant	X	Total Cost of Production	X

ledger for direct costs. The manufacturing statement is illustrated in Exhibit 14.

Statement of Production Costs by Product Item—Detailed statements on cost of production are prepared one for each product by size. These statements are somewhat of an extension of the manufacturing statement, and each detailed product statement agrees with the total for that product shown on the manufacturing statement. In other words the manufacturing statement is in reality a summary of the control figures for the detailed cost statements. The total and per case figures are shown for values as well as quantities of materials in separate statements by elements of direct cost, in addition to the indirect costs applied. This statement is illustrated in Exhibit 15 for tomato juice.

This information is useful in connection with the next year's pack estimates and budget revision. A comparative statement showing the unit figures by elements for several years is helpful, since it indicates the trend in manufacturing efficiency and economic changes. The total unit cost per case is used in valuing inventories.

The direct costs shown in these statements are actual costs, since all variances on direct labour, materials, and expense are distributed over the products using the elements by size. The indirect manufacturing costs, however, are supplied on the basis of the budget standards. This applied to monthly operating statements, although at the end of the year the standard costs applied for indirect expense may be replaced with the actual costs if the variances from standard are significant.

Exhibit 15

Statement of Production Costs by Product Item—Tomato Juice

Element	Total Value	10-ounce Total	10-ounce Per Case	20-ounce Total	20-ounce Per Case
Direct Costs					
Labour	X	X	X	X	X
Raw Produce	X	X	X	X	X
Cans	X	X	X	X	X
Cartons	X	X	X	X	X
Condiments	X	X	X	X	X
Crop Expense	X	X	X	X	X
Loss on Seed or Plants	X	X	X	X	X
Trucking Raw Produce	X	X	X	X	X
Power Plant Expense	X	X	X	X	X
Indirect Product Labour	X	X	X	X	X
Other Direct Expense	X	X	X	X	X
Total Direct Costs	X	X	X	X	X
Indirect Costs Applied	X	X	X	X	X
Total Cost of Production	X	X	X	X	X

Note—Similar Statements are prepared for quantities of raw material in total and per case.

WAREHOUSE AND SHIPPING EXPENSE

Warehouse and shipping expense differ from production cost, since it is customary to do the labelling just prior to shipment, and it is distributed over the sales or shipments made during the period rather than over production. It includes labels and labelling labour, although such are in reality a part of the production cost, but they are included in the warehouse and shipping expense because the cost varies with sales rather than production. Warehouse and shipping expense forms a separate part of the cost of sales, however, but does not constitute part of the inventory value. At the close of a financial period the quantity of labelled merchandise on hand can be ignored insofar as the labelling expense is concerned, unless such cost is large enough to affect the results significantly.

Exhibit 16

Warehouse and Shipping Cost—Standard Cost

Standard Cost per Case

Element	Tomatoes			Tomato Juice				Tomato Soup	Tomato Puree	Total Standard Cost
	15	28	105	10	20	48	105	10	105	
Cases Shipped	X	X	X	X	X	X	X	X	X	X
Direct Costs										
Labels	X	X	X	X	X	X	X	X	X	X
Labelling Labour	X	X	X	X	X	X	X	X	X	X
Shipping Labour	X	X	X	X	X	X	X	X	X	X
Total Direct Costs	X	X	X	X	X	X	X	X	X	X
Indirect Costs	X	X	X	X	X	X	X	X	X	X
Total W&S Cost per Case	X	X	X	X	X	X	X	X	X	X
Total Standard Cost	X	X	X	X	X	X	X	X	X	X

Standard Costs—Since the expense under this section are partly direct and partly indirect, the methods of arriving at the standard cost per case for the various elements of cost are similar to those already explained for production cost. Exhibit 16 shows a standard cost sheet for warehouse and shipping expense. The totals of the vertical columns give the total cost per case, which when multiplied by the cases packed give the total standard cost per product item. The actual costs of the elements are prorated over the cases packed similar to the illustration in Exhibit 4 for direct labour.

A separate subsidiary ledger for each plant is maintained for warehouse and shipping expense, with separate accounts for each element of direct and indirect expense. These subsidiary ledgers are controlled by one account in the general ledger.

COST OF SALES AND TRADING PROFIT

The Cost of Sales

The cost of sales is divided into two distinct sections. The production cost includes processing labour, farm produce, condiments, cans, cartons, and direct expense items, including the cost of casing and stacking in the warehouse, and manufacturing overhead. This is the point in the cost accumulation at which inventories are valued. All these costs are apportioned over the cases packed. The costs of labelling and shipping and incidental warehousing expense, including labels, are distributed over the cases sold. These two elements are combined to constitute the factory cost of sales. R. H. Barr (2) indicates that the practice of California fruit canners is to include the cost of cases and labour of casing as the warehouse and shipping expense. The reason for this variation in method is that they stack the cans loosely in ricks, and case up at the time of labelling so that the cost of casing would vary with shipments.

Both number of cases and cost values are shown for each factor in the cost of sales statement. The beginning inventory plus the production during the period at the unit costs shown in the statement of cost of production, less the ending inventory, gives the total merchandise to account for or inventory reduction. The sales samples are valued at cost and charged to selling expense and credited to inventory. The defective merchandise discovered in warehouse represents the net loss arising from unsaleable goods as explained below. The actual shipments or sales are costed at the unit cost of production, and the number of cases unaccounted for are also costed at this figure. The warehouse cost is derived from the detailed warehouse cost statement referred to in the preceding section. All these factors added together give the total production and shipping cost of sales.

Defective Merchandise

Defective merchandise discovered in warehouse is reported in a daily labelling report by the warehouse superintendent. These figures are recapitulated monthly and valued at cost and charged to a special defective merchandise inventory by cases and value for each size, and credited to the regular merchandise inventory. Much of the defective merchandise is saleable in the nature of dents and rusties to employees, and the returns from such sales are credited to the defective merchandise inventory

account. When merchandise becomes unfit for consumption it is dumped, and a report is submitted covering the details. These goods are valued at cost, as well as is the inventory variance in the defective merchandise inventory account, and charged to an account called Loss from Warehouse Defective Merchandise, which is transferred to Cost of Sales. This of course is credited to Defective Merchandise Inventory account. These transactions are summarized below.

Event	Account Dr.	Account Cr.
Defective merchandise discovered in warehouse and reported on daily label report	Defective Merchadise Inventory	Merchandise Inventory
Sales of defective merchandise	Accounts Receivable or Cash	Defective Mdse. Inventory
Defective mdse. dumped per dumping report	Loss from Defective Merchandise	"
Inventory Variance on defective mdse.	"	"

The principles explained regarding the warehouse and shipping expense applies to defective merchandise, since it is discovered in shipping as the goods are labelled for shipment. For this reason the quantity discovered is related to the goods labelled and shipped, and the net loss after sales should be charged directly to the cost of sales rather than to direct factory expense, since the expense varies with sales or shipments of more than one years pack rather than with production. Allowances for defective merchandise after shipment are likewise charged to Cost of Sales, but kept entirely separate from the above.

Trading Profit Statement

The sales less the cost of sales results in the gross profit. The sales by cases and value for each product item is the result of a detailed sales analysis and is summarized by product item for the Gross Profit Statement. The cost of sales is copied from the Statement of Cost of Sales. The per case figures are computed on sales, cost of sales, and gross profit, as well as the percentages to sales of cost and gross profit, all by product item.

The grades of each product item are grouped because the opinion is held that such a procedure gives the desired information.

Selling expense is divided into direct product expense and indirect expense, following the principles of factory direct and indirect costs. The Indirect selling expense and administrative and general expense is distributed over the product items on the basis of sales value. This apportioned cost together with the direct cost of each product is shown on the trading profit statement, and then the net trading profit is computed for value, per case and percenage of sales. This information is of utmost value to management in evaluating the profitability of the operations for the period in each plant and by product item.

THE FACTORY BUDGET

Owing to the lack of space in this paper only the factory budget is dealt with.

Throughout the development of this thesis we have established methods of arriving at the cost per case by product items for direct labour, direct materials, and direct expense. We have also established standard overhead costs. Warehouse and shipping expense is also included, and if it is anticipated that the volume of shipments will not roughly correspond with the volume of production, then a separate budget of cases to be shipped must be prepared upon which to base the shipping expense.

The master budget is prepared in two sections: one covering values and the other quantities of materials. The various standard unit costs per case developed are compiled on the master budget sheet having the various product items along the horizontal headings and the detailed elements of cost for the vertical headings. The total budgeted production of each product item is multiplied by the standard cost per case to obtain the total standard cost for each element of cost. Extensions are made of the total standard cost for each item to give the total budget cost of each element, such as labour, raw produce, cans, cartons, etc. This latter information is of considerable value to the management in laying financial plans for operating the plant during the ensuing year. By computing what estimated percentage of this total expense by element is required to be paid each month, the disbursement portion of the factory financial budget can be prepared. The master budget sheet provides a vertical and horizontal check on the total budget cost.

The second master budget sheet deals with quantities of materials, and is prepared in a similar manner to the value budget, but dealing with quantities of materials only. The extension of the total standard quantities of each material for each can size will give the total materials required for each size. This applies to cans and cartons, while raw produce, condiments, etc., need to be extended in grand total only, neglecting the can sizes. This information is of particular use to the purchasing department in placing orders well in advance of the canning season for the materials required. This insures delivery of materials when needed, giving the vendors opportunity to fabricate them, particularly cans and cartons.

A separate master budget sheet is prepared for each plant operated, which in turn are summarized to arrive at the totals for all plants combined.

The departmental expense budget supporting the total departmental expense shown in the master budget is prepared, showing the expense estimate for each department broken down by labour, supplies, repairs, expense, and the various fixed charges, etc.

The control features in the factory budget are embodied chiefly in the daily and monthly comparisons with the standards established, and provide the management with a current operating tool for the effective control of costs in time to exert pressure on the causes to bring the costs in line. In the canning industry the items requiring the closest watching are direct labour, raw produce, cans, and cartons. Daily and weekly cumulative cost reports on these elements are essential to the efficient administration of the plant. Once seasonal packs are over, which are usually of very short duration of mass-production, then it is too late to do anything about costs

that are out of line. For this reason the job of the cost accountant is vital to the profitable operation of a cannery.

SUMMARY

The Problem of joint costs is of prime importance in the canning industry, not only in allocating labour, materials, and expense to products, but further in allocating the product costs to the sizes packed. The comparative can content per case is particularly useful in prorating the cost of a product over the various sizes where can content is a common factor. The pounds of raw produce required for the canned product is another basis for allocating costs that bear a relation to raw produce. Standard costs are used not only in the preparation of the budget and for controlling costs, but also as a basis for distributing actual costs over the various product items.

The distribution of indirect manufacturing costs to production on a coverted case basis by production departments, meets the objections usually encountered with the fund method. The service department and fixed costs are first distributed over the production departments on the several bases, and the direct departmental expense is added to the apportioned expense, to get the total departmental expense. The total expense of each production department is distributed over the product of the department. The sum of the departmental unit costs gives the total overhead cost per case.

Production costs are divided into two groups, direct and indirect. The direct costs consist of labour raw produce, cans, cartons, condiments, and various expense items. Indirect costs, of course, are the overhead items. Inventories are valued at the accumulated average cost at this point. Warehouse and shipping expense is also partly direct and partly indirect. The direct costs being for labels, labelling labour and shipping labour, while the indirect costs cover the general warehouse expense. Both the production costs and the shipping costs constitute the factory cost of sales, although the production cost is apportioned over the production of the period while the latter is apportioned over the shipments of the period. Defective merchandise discovered before shipment and that allowed for after shipment, less recovery of sales of such goods, is also charged to the cost of sales. The cost of sales statement and the net trading profit statement are prepared by product and size.

Note: Certain exhibits submitted with the above paper have been omitted but can be secured on application to the Editor. They are as follows:

Exhibit 1. Statistics on Fruit and Vegetable Canner.
Exhibit 2. Floor Chart.
Exhibit 3. Daily Direct Labour Cost.
Exhibit 4. Direct Labour Cost—Actual Cumulative.
Exhibit 17. Statement of Cost of Sales.
Exhibit 20. Factory Master Budget Sheet.

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GLOSSARY

ABSOLUTE USAGE is the net weight of raw produce which is required to fill a case of cans of a given size.

CAN LINE is a track feeding cans of a given size from the storeroom or freight car to the filling and closing machines set to accommodate that size of can.

DEFECTIVE MERCHANDISE consists of all canned goods which are not fit to be labelled and sold through regular trade channels; some of the defective merchandise which is edible is sold as dents and rusties to employees.

DENTS are defective canned goods which have been dented in handling but otherwise are edible foods.

LEAKS are defective canned goods which have been imperfectly sealed.

MULTIPLE-LINE PLANT is one which is equipped to can several sizes simultaneously.

ONE-LINE PLANT is a factory which is equipped to can one size only.

PRODUCT refers to a fruit, vegetable or other item of canned food which has a different consistency from any other item, but includes all the can sizes packed to it.

PRODUCT GROUP is that group of products which is made from a single basic raw produce item such as tomatoes.

PRODUCT ITEM is a given size of a product.

PULP is the juice from tomatoes boiled down into a thick mass.

RICKS are tiers of canned goods in the warehouse not in cartons. Some canners do not case the goods until they are labelled after the pack is over, but rather stack in ricks.

RUSTIES are defective canned goods through the thin coating of tinplate of which rust has penetrated but which may still be edible if the rust has not eaten through the container.

RETORT is a pressure cooker.

SWELLS are defective canned goods which are characterized by a bulged can.

VARIETY is synonymous with product.

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